CLAIMS

What is claimed is: An iterative computer-implemented process for creating an entity that 1 approximately satisfies a design requirement that at least one characteristic is not in the 2 prior art, the process invoking iterations, each iteration comprising 3 4 selecting at least one candidate entity, wherein selection is more likely for a candidate entity that satisfies the design requirement to a greater degree than another candidate entity and for a candidate entity that avoids prior art to a lesser degree than another candidate entity; and creating at least one new candidate entity by creating a variation in the at least 11.d ... 19 one candidate entity. Ļj []1 2. The process defined in Claim 1 wherein creating at least one new 2 candidate entity comprises mutating the at least one candidate entity. 1 3. The process defined in Claim 2 wherein selecting the at least one 2 candidate entity is performed by simulating annealing. 1 4. The process defined in Claim 2 wherein selecting at least one candidate 2 controller is performed by hill climbing.

5. The process defined in Claim 1 wherein the at least one candidate entity is a member of a population of entities.

1

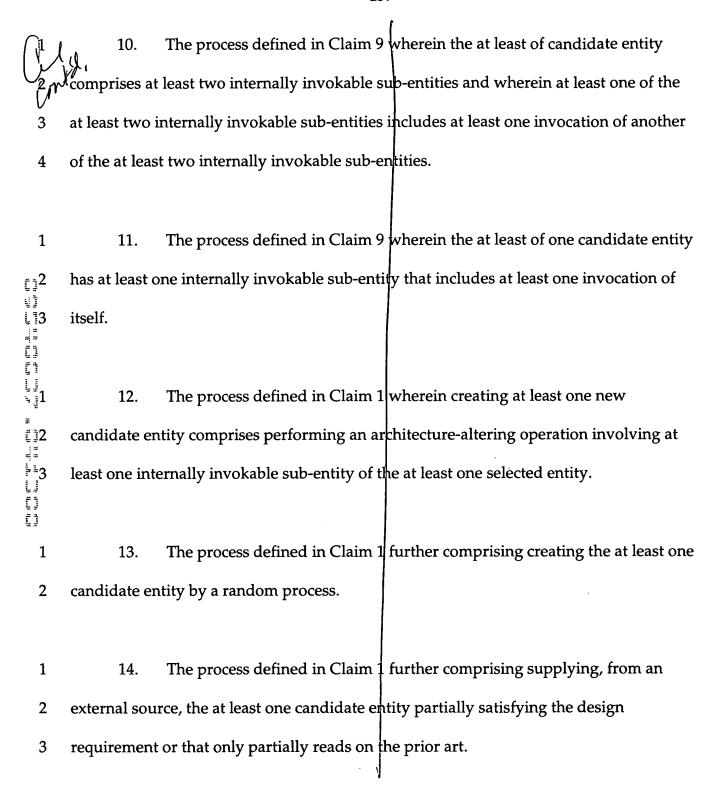
2

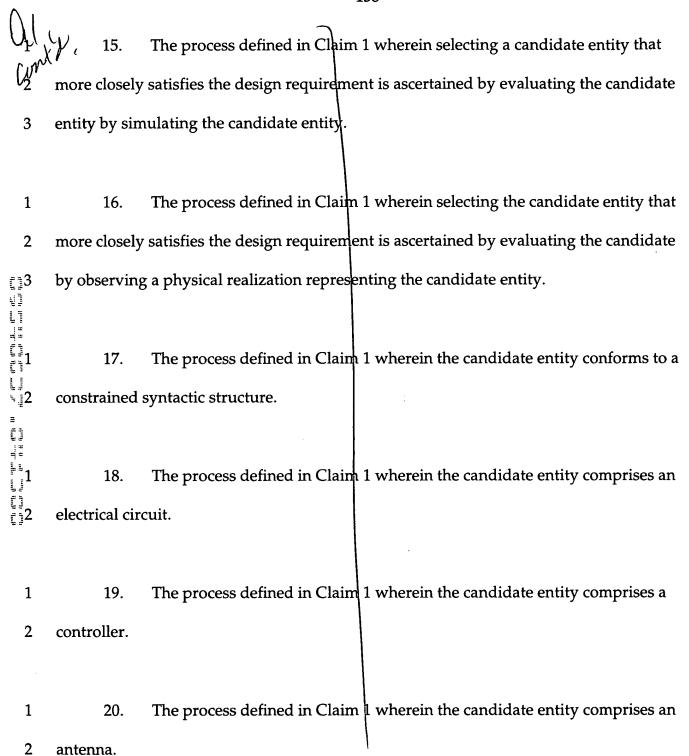
3

[]4

1."." 1......

- 6. The process defined in Claim 5 wherein creating at least one new candidate entity comprises performing a crossover operation among a group of candidate entities, the group of entities comprising the selected entity and at least one other entity from the population, the at least one new coordinate entity created by crossover comprising at least a portion of the selected entity and at least a portion of that at least one other entity.
 - 7. The process defined in Claim 1 further comprising performing genetic programming operations.
- 1 8. The process defined in Claim 1 further comprising genetic algorithms 2 operations.
- 9. The process defined in Claim 1 wherein the at least one of candidate entity comprises at least one externally invokable sub-entity and at least one internally invokable sub-entity, the at least one externally invokable sub-entity capable of
- 4 including at least one invocation of the at least one internally invokable sub-entity.





1	21. The process defined in Claim 1 wherein the candidate entity comprises a
2	mechanical system.
1	22. An iterative computer-implemented process for creating an entity that
2	approximately satisfies a design requirement that includes technical requirements and
3	dissimilarity to preexisting technology, the process invoking iterations, each iteration
14	comprising:
14 15 16	producing a structure;
6	determining behavior and characteristics of the structure;
# #7	comparing the structure to preexisting technology;
<u></u> 8	determining fitness of the structure by combining compliance with the technical
9	requirements and dissimilarity to preexisting technology.
their timi	add